

Journal of Advanced Research

Official Journal of Cairo University

EDITORIAL BOARD

President of Cairo University

Hossam M. Kamel

Vice President of Cairo University for Graduate Studies

Gamal Esmat

Editor-in-Chief

Hussein M. Khaled

Deputy Editor

Ahmed S. Shawali

Managing Editor

A.M. Abd El-Aty

Associate Editors

Rashad S. Barsoum, Medicine

Samy Abdel-Samad, Physical Therapy

Ahmed M. Soliman, Engineering

Amr A. Adly, Engineering

Yousry M. Issa, Science

Rashika A.F. El Ridi, Science

Ahmed I. Zayed, Science

Abd El-Aty M. Abd El-Aty, Veterinary Medicine

Hany A. El Shemy, Agriculture

Mohamed A. Farag, Pharmacy

Omaima N. El-Gazayerly, Pharmacy

Mohamed A. Hairth, Science

Hisham Tarraf, Medicine

Nour T. Abdel-Ghani, Science

Nasser H. Sweilam, Science

Editorial Advisory Board

Pharmacy

Paul W. Paré, Texas Tech University, USA

Teresa W.M. Fan, University of Louisville, USA

Abeer M. Al-Ghananeem, University of Kentucky, USA

Mostafa S. El Shahed, Oklahoma State University, USA

Ângelo de Fátima, Universidade Federal de Minas Gerais, Brazil

Abdel A. Abdel-Rahman, East Carolina University, USA

Veterinary Medicine

Gen Watanabe, Tokyo University of Agriculture and Technology, Japan

Minoru Shimoda, Tokyo University of Agriculture and Technology, Japan

Elisa Escudero, Campus Universitario de Espinardo, Spain

Mohamed Faisal, Michigan State University, USA

Clifford E. Starliper, USGS National Fish Health Research Laboratory, USA

Robert J. Linhardt, Rensselaer Polytechnic Institute, NY, USA

Agriculture

Karl Schellander, University Bonn, Germany

Kounosuke Fujita, Hiroshima University, Japan

David Lightfoot, Southern Illinois University (SIU), USA

Engineering

Alan W. Gertler, Desert Research Institute, USA

Tarek N. Saadawi, City College of the City University of New York, USA

Pak K. Chan, Nanyang Technological University, Singapore

Tarek M. Sobh, University of Bridgeport, USA

M. Sherif Aggour, University of Maryland, USA

Medicine

Gaku Ichihara, Nagoya University Graduate School of Medicine, Japan

Sayed Dauod, Washington State University, USA

Mohamed B. Abou-Donia, Duke University, USA

Jan P. Van Meerbeeck, University Hospital, Belgium

Nicholas A. Pavlidis, University of Ioannina, Greece

Enrico Mihich, Roswell Park Cancer Institute, USA

Yousef M. Rustum, Roswell Park Cancer Institute, USA

Neil Dewhurst, University of Dundee, UK

Tawfik Ayoub, University of Southern California, USA

Charles Swanepoel, The University of Cape Town, South Africa

F. van der Veen, Academic Medical Center, University of Amsterdam, The Netherlands

Science

Hian Kee Lee, National University of Singapore, Singapore

Jae-Han Shim, Chonnam National University, Republic of Korea

Jose L. Tadeo, National Institute for Agricultural Research, Spain

Michael Spiteller, University of Dortmund, Germany

Neil J. Coville, School of Chemistry, University of Witwatersrand, Johannesburg

Mostafa A. El-Sayed, Georgia Institute of Technology, USA

Farouk El-Baz, Boston University Centre for Remote Sensing, USA

Mourad E.H. Ismail, University of Central Florida, USA

Adolfo Ballester-Bolínches, Universitat de Valencia, Spain

Ismael Herrera, National University of Mexico, Mexico

Holger Hindorf, Pflanzenkrankheiten Institute, Bonn, Germany

Frantisek Svec, University of California, USA

Markus W. Sigrist, Institute for Quantum Electronics, Switzerland

Executive Office

Executive Editors

Shorouk A.W. El Shennawy

Mohamed A. Mahmoud

Enas Mobarak

Editorial Manager Assistants

Nardien A. Hanna

Gehan Galal

Shimaa M. Hassan